

1 **Claims**

2 What is claimed, is:

3 1. A data packet processing device for processing data
4 packets received from a network , including:

- 5 - a processor for processing data packets;
6 - an interface operable for transmitting data packets
7 to and from an external memory;
8 - a scheduler for assigning priority information to
9 received data packets, the priority information
10 determining an order of data packets to be processed;
11 - an internal memory for storing data packets;
12 - a memory manager operable to cause storing data
13 packets in the external memory and to provide data
14 packets in the internal memory for being processed in
15 the processing means; wherein the memory manger
16 provides data packets in the internal memory for being
17 processed by the processor subject to the priority
18 information assigned to the data packets.

19 2. A data packet processing device according to claim 1,
20 wherein depending on the priority information assigned
21 to a data packet, the memory manager transfers the data
22 packet stored in external memory into internal memory.

23 3. A data packet processing device according to claim 1,
24 wherein depending on the priority information assigned
25 to a data packet, the memory manager transmits the data
26 packet from the internal memory to the external memory.

27 4. A data packet processing device according to claim 2,
28 wherein the memory manager means keeps a data packet
29 stored in the internal memory if the priority

1 information assigned to the data packet indicates a
2 high priority, and transmits the data packet to the
3 external memory if the priority information assigned to
4 the data packet indicates a low priority.

5 5. A data packet processing device according to claim 4,
6 wherein the internal memory has a size to store a
7 number x of data packets to be processed next,
8 wherein the priority of a data packet is high if the
9 assigned priority information indicates that the data
10 packet is within the next $x - 1$ ones to be processed
11 and/or wherein the priority of the data packet is low
12 if the assigned priority information indicates that the
13 data packet is not within the next $x - 1$ ones to be
14 processed.

15 6. A method comprising processing data packets,
16 wherein data packets are received from a network;
17 wherein the data packets are processed;
18 wherein priority information is assigned to the
19 received data packets, the priority information
20 determining an order of data packets to be processed;
21 wherein the data packets are stored in a fast
22 accessible memory wherein depending on the priority
23 information assigned to received data packets, the
24 respective data packets are provided in the fast
25 accessible memory for being processed or transferred
26 from the fast accessible memory to a main memory.

- 1 7. A method according to claim 6, wherein depending on the
2 priority information assigned to data packets, the
3 provision of the respective data packets in the fast
4 accessible memory for being processed is performed by:
5 - transferring the respective data packet to the fast
6 accessible memory if the data packet is stored in said
7 main memory; or
8 - keeping the respective data packet stored in the fast
9 accessible memory if the data packet is stored in the
10 fast accessible memory.
11
- 12 8. A method according to claim 6, wherein the respective
13 data packet is kept stored in the fast accessible
14 memory if the priority information assigned to the
15 respective data packet indicates a high priority, or is
16 transferred to the main memory to be stored if the
17 priority information assigned to the respective data
18 packet indicates a low priority.
- 19 9. A method according to claim 8, wherein the internal
20 memory has a size to store a first number x of data
21 packets,
22 wherein the priority of a data packet is high if the
23 assigned priority information indicates that the data
24 packet is within the next $x - 1$ ones to be processed,
25 and/or wherein the priority of a data packet is low if
26 the assigned priority information indicates that the
27 data packet is not within the next $x - 1$ ones to be
28 processed.
- 29 10. An article of manufacture comprising a computer usable
30 medium having computer readable program code means
31 embodied therein for causing the processing of data
32 packets, the computer readable program code means in

1 said article of manufacture comprising computer
2 readable program code means for causing a computer to
3 effect the steps of claim 6.

4 11. A program storage device readable by machine, tangibly
5 embodying a program of instructions executable by the
6 machine to perform method steps for processing data
7 packets, said method steps comprising the steps of
8 claim 6.

9 12. A computer program product comprising a computer usable
10 medium having computer readable program code means
11 embodied therein for causing processing data packets
12 received from a network, the computer readable program
13 code means in said computer program product comprising
14 computer readable program code means for causing a
15 computer to effect the functions of claim 1.

16 13. A method for processing data packets received from a
17 network, said method comprising:
18 - assigning priority information to received data
19 packet;
20 - employing the priority information to determine a
21 processing order of the received data packets;
22 - storing the received data packets in a fast
23 accessible memory;
24 - providing the received data packets in the fast
25 accessible memory for being processed in accordance
26 with the priority information; and
27 - transferring the received data packets from the fast
28 accessible memory to a main memory in accordance with
29 the priority information.

- 1 14. An article of manufacture comprising a computer usable
2 medium having computer readable program code means
3 embodied therein for causing the processing of data
4 packets, the computer readable program code means in
5 said article of manufacture comprising computer
6 readable program code means for causing a computer to
7 effect the steps of claim 13.
- 8 15. A program storage device readable by machine, tangibly
9 embodying a program of instructions executable by the
10 machine to perform method steps for processing data
11 packets, said method steps comprising the steps of
12 claim 13.
- 13 16. A method for processing a data packet, said method
14 comprising:
15 - receiving the data packet from a network;
16 - storing the data packet in internal memory;
17 - determining a priority of the received data packet
18 and providing priority information assigned to the
19 data packet;
20 -if the priority of the data packet is high, keeping
21 the data packet is kept in the internal memory for
22 processing as one of the next data packets; and
23 - if the priority of the data packet is not high,
24 transferring the data packet to external memory.
- 25 17. A method as recited in claim 17, further comprising
26 checking if a next packet is received having a high
27 priority;
28 - if the next packet is received having a high
29 priority, repeating the steps of storing and
30 determining for the next packet; and

1 - if the next data packet is not received, waiting
2 until the next data packet is received and repeating
3 the step of checking.

4 18. An article of manufacture comprising a computer usable
5 medium having computer readable program code means
6 embodied therein for causing the processing of data
7 packets, the computer readable program code means in
8 said article of manufacture comprising computer
9 readable program code means for causing a computer to
10 effect the steps of claim 16.

11 19. A program storage device readable by machine, tangibly
12 embodying a program of instructions executable by the
13 machine to perform method steps for processing data
14 packets, said method steps comprising the steps of
15 claim 16.